

FIG. 1

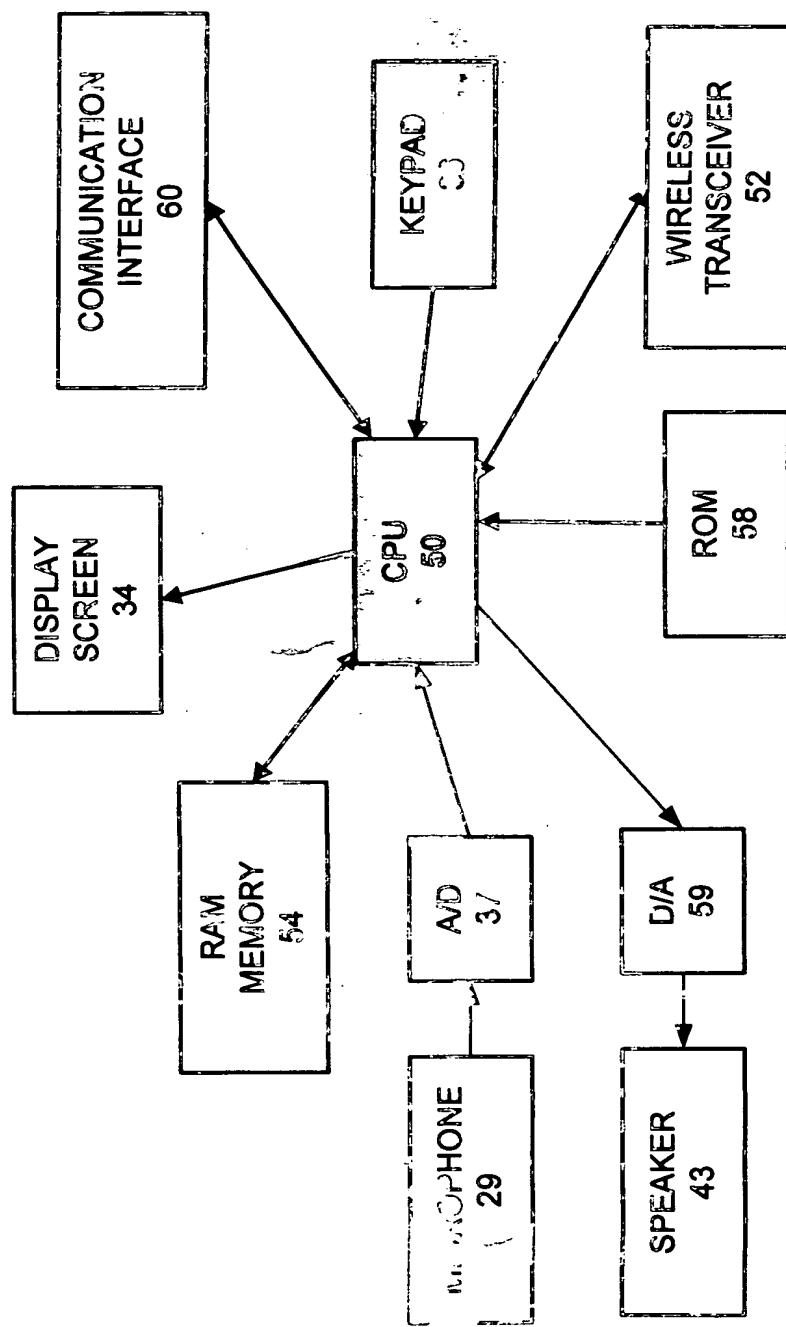
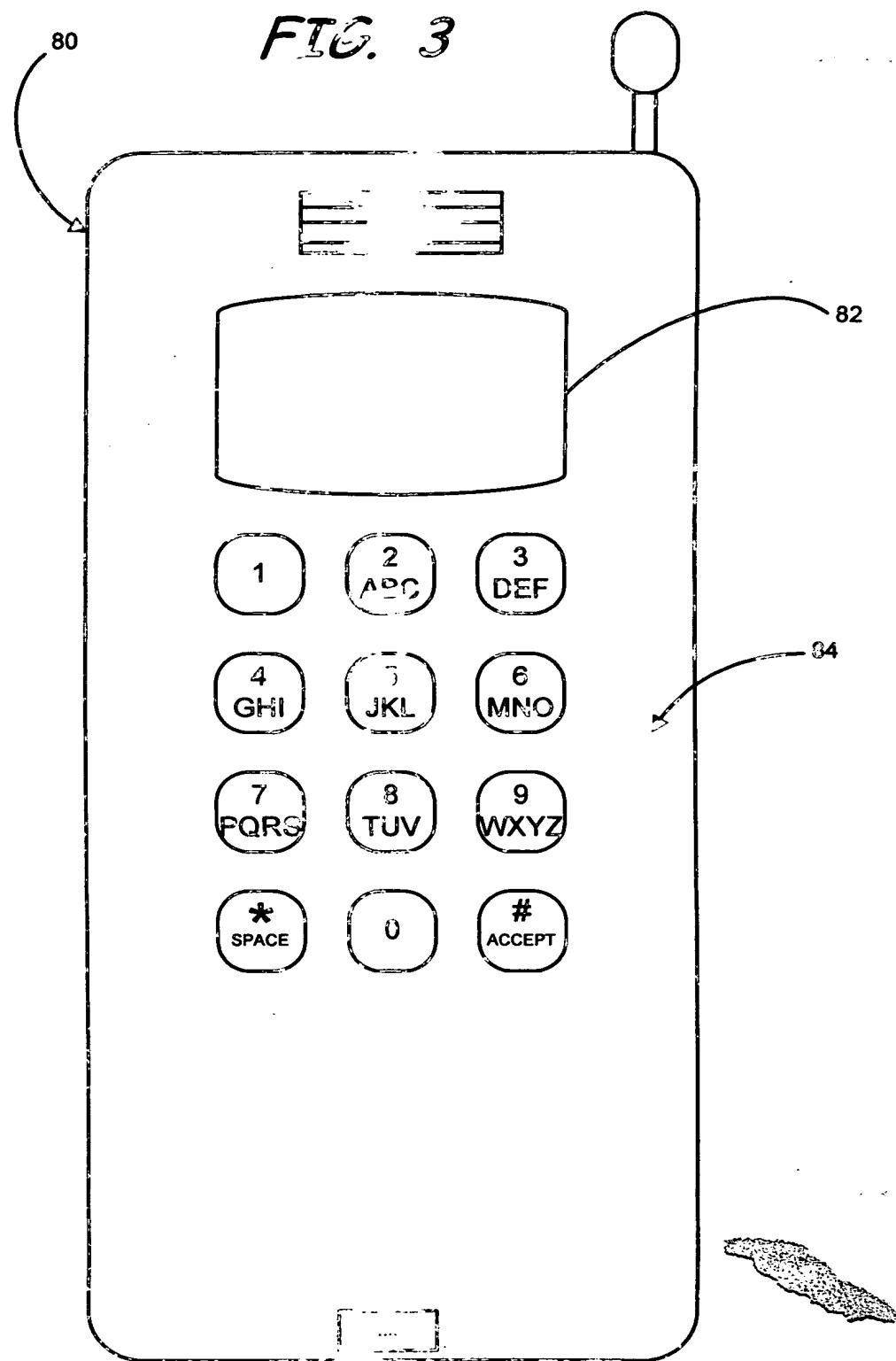


FIG.2

FIG. 3



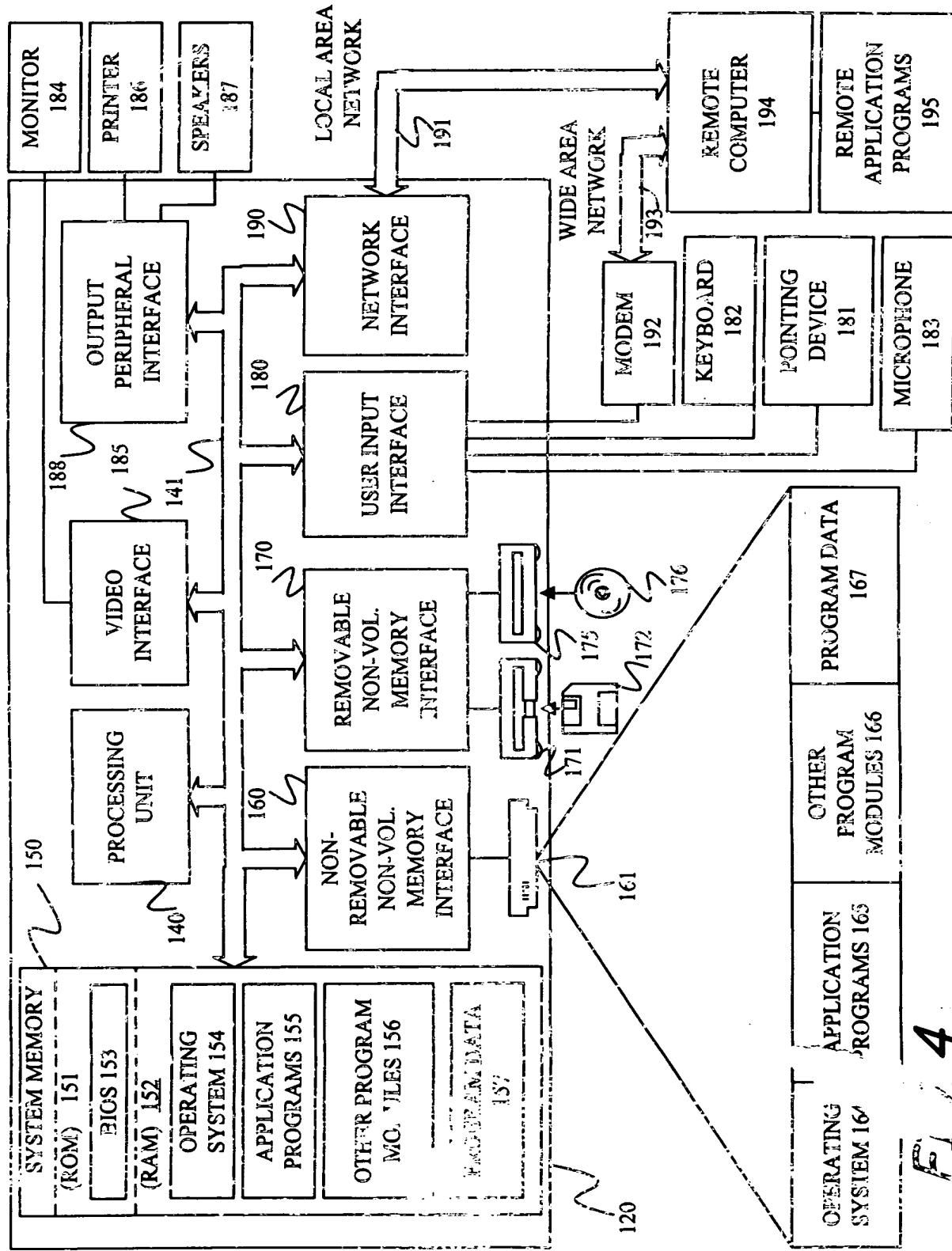
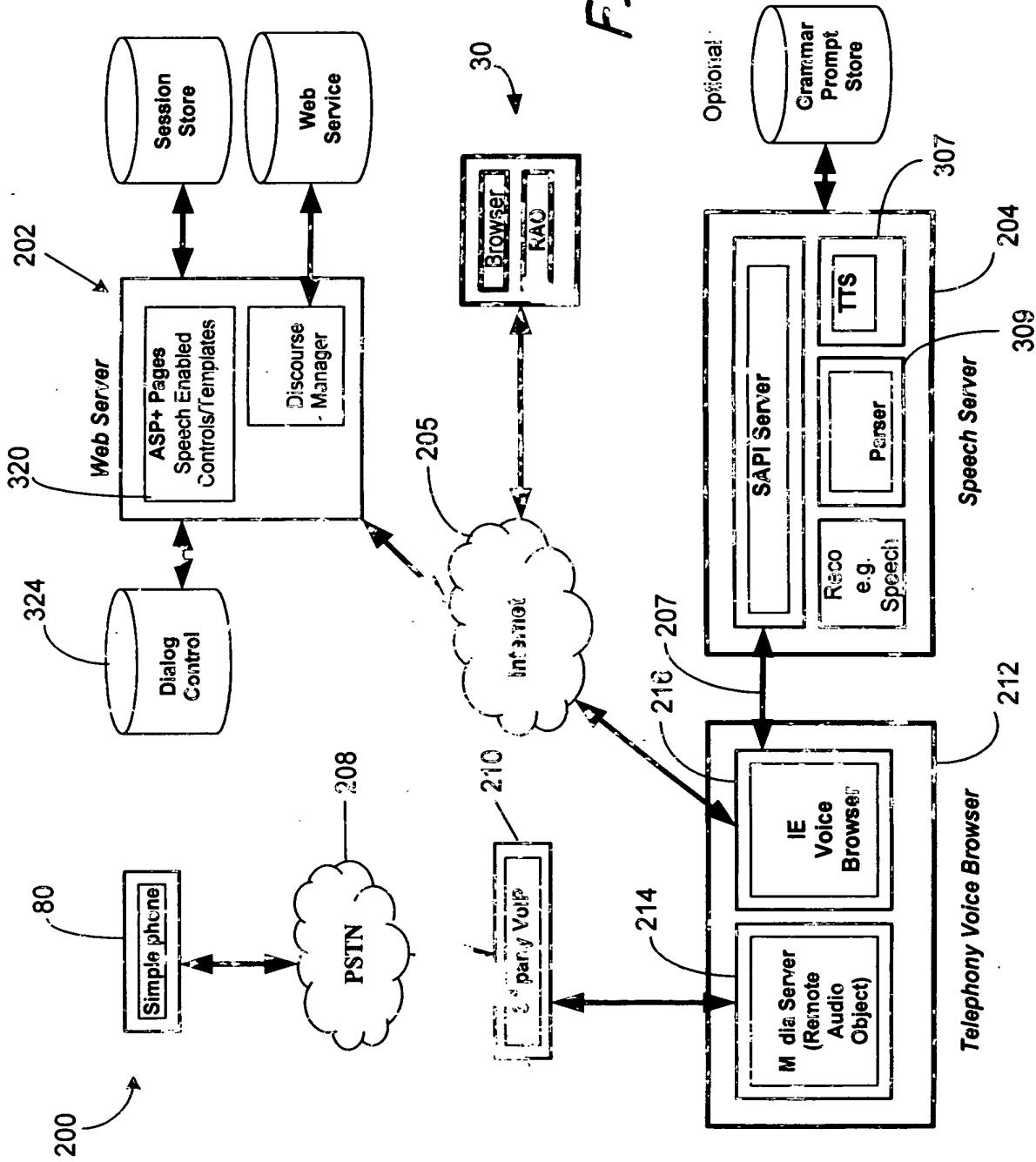


FIG. 5



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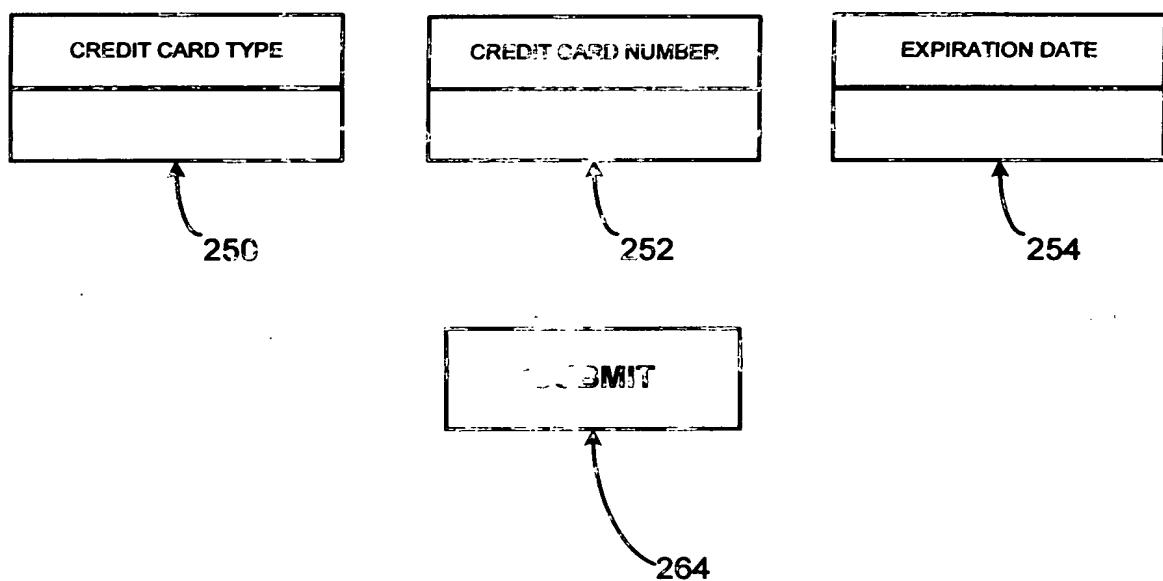


FIG. 6

```

<html>
  <form id="get_card_info" method="post" action="http://payment.asp">
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="mastercard">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30"
      onChange="handle()" />
    <input type="text" name="expiry_date" />
    <input type="button" value="Submit" onClick="verify()" />
  </form>
  <script><![CDATA[
    function handle() {
      if (get_card_info.card_type.value == "amex") {
        if (get_card_info.card_num.length != 15)
          alert ("amex should have 15 digits");
      } else
        if (get_card_info.card_num.length != 16)
          alert ("visa and master should have 16 digits");
    }

    function verify() {
      var flag = window.confirm("submit the credit card info?");
      if (flag)
        get_card_info.submit();
    }
  ]]>
</script>

```

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FIG. 7

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270 <html>

272 <form id="get_card_info" method="post" action="http://payment.asp">

273 <select name="card_type" onClick="talk(g_card_types)">

274 <option value="amex">American Express</option>

275 <option value="visa">Visa</option>

276 <option value="ms">MasterCard</option>

277 </select>

278 <reco id="g_card_types" onReco="handle()">

279 <grammar src="./gram#card_types" />

280 </reco>

281 <input type="text" name="card_num" width="30" onClick="talk(g_card_num)" />

282 <reco id="g_card_num" onReco="handle()">

283 <grammar src="./gram#digits" />

284 </reco>

285 <input type="text" name="expiry_date" onClick="talk(g_expiry_date)" />

286 <reco id="g_expiry_date">

287 <grammar src="./gram#dates" />

288 </reco>

289 <input type="submit" value="Submit" onClick="verify()" />

290 </form>

291 <script><![CDATA[

292 function talk(gobj) {

293 gobj.activate();

294 }

295 function handle() {

296 if (get_card_info.card_num != null) {

297 if (get_card_info.card_type.value == "amex") {

298 if (get_card_info.card_num.length != 15)

299 alert("amex should have 15 digits");

300 } else

301 if (get_card_info.card_num.length != 16)

302 alert("visa and master should have 16 digits");

303 }

304 }

305 function verify() {

306 var flag = window.confirm("submit the credit card info?");

307 if (flag) {

308 get_card_info.submit();

309 }

310 }

311]]>

312 </script>

313 </html>

FIG. 8

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```
< body >
  < form id = " get_card_info " method = " post " action = " http://payment.asp "
    onActivate = " walcom() " >
    < prompt id = " p_welcome " > We now need your credit card </ prompt >
    < prompt id = " p_mumble " > I didn't understand you </ prompt >
    < prompt id = " p_card_type " bargain = " true " > What credit card would you
    use? </ prompt >
    < prompt id = " p_card_num " bargain = " true " > Please say the number </ prompt >
    < prompt id = " p_expiry_date " bargain = " true " > What is the expiration
    date? </ prompt >
    < prompt id = " p_content " >
      I have your < value select = " card_type " /> < value select = " card_num " />
      with expiration date
      < value select = " expiry_date " />
    </ prompt >
    < prompt id = " p_confirm " > Is this correct? </ prompt >
    < reco id = " g_card_types " onNoReco = " mumble(this, 3) " >
      onReco = " _handle(this, card_type) " />
      < grammar src = " ./gram#card_types " >
    </ reco >
    < reco id = " g_card_num " onNoReco = " mumble(this, 1) " >
      onReco = " _handle(this, card_num) " />
      < grammar src = " ./gram#digits " />
    </ reco >
    < reco id = " g_expiry_date " onNoReco = " mumble(this, 1) " >
      onReco = " _handle(this, expiry_date) " audio = " rao " />
      < grammar src = " ./gram#dates " />
    </ reco >
    < reco id = " confirmation " onReco = " confirmed(this) " />
      < grammar src = " ./gram#yesno " />
    </ reco >
    < select name = " card_type " >
      < option value = " amex " > American Express </ option >
      < option value = " visa " > Visa </ option >
      < option value = " ms " > MasterCard </ option >
    </ select >
    < input type = " text " name = " card_num " width = " 30 " />
    < input type = " text " name = " expiry_date " />
    < input type = " submit " value = " Submit " />
  </ form >
  < script ><![CDATA[
    function welcome() {
      p_welcome.active();
      repeat = 0;
      checkFilled();
    }
    function mumble(gobj, maxprompts) {
      gobj.deactivate();
      p_mumble.active();
      checkFilled();
    }
  ]]>
```

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TO FIG. 9B

FIG. 9A

```

function _handle() {
    handle();
    checkFilled();
}

function checkFilled() {
    if (card_type.value == "") {
        p_card_type.active();
        g_card_types.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.active(); g_card_num.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_data.active(); g_expiry_date.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}

function confirmed(gobj) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit();
}

// user codes start here
function handle() {
    if (get_card_info.card_type == "amex") {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else {
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa and master should have 16 digits");
            get_card_info.card_num = "";
        }
    }
}
]]>
</script>
</body>

```

FIG. 9B

```

<body>
  <form id="p_card_info" method="post" action="http://payment.asp"
    onactivate="welcome()">
    <prompt id="p_welcome">We only need your credit card</prompt>
    <prompt id="p_mum" value="I understand you" />
    <prompt id="p_card_type" bargein="true">What credit card would you
    use?</prompt>
    <prompt id="p_card_num" bargein="true">Please say the number</prompt>
    <prompt id="p_expiry_date" bargein="true">What is the expiration
    date?</prompt>
    <prompt id="p_content">
      I have your <value select="card_type" /><value select="card_num" />
      with expiration date<value select="expiry_date" />
    </prompt>
    <prompt id="p_conf" value="correct?></prompt>
    <reco id="g_get_card" onReco="handle()" onNoReco="mumble(this)">
      <grammar src="..\bin/getPayment">
        <bind target="card_type" value="/card/type" />
        <bind target="card_num" value="/card/number" />
        <bind target="expiry_date" value="/card/expr_date" />
    </reco>
    <reco id="confirmation" onReco="confirmed(this)" onNoReco="mumble(this)">
      <grammar src="..\gram\#yesno">
    </reco>
    <select name="card_type">
      <option value="amex">American Express</option>
      <option value="visa">Visa</option>
      <option value="ms">MasterCard</option>
    </select>
    <input type="text" name="card_num" width="30" />
    <input type="text" name="expiry_date" />
    <input type="submit" value="Submit" />
  </form>
  <script><!-- AT&T
    function welcome() {
      p_welcome.active();
      repeat = 0;
      checkFilled();
    }
    function mumble(gobj) {
      gobj.deactivate();
      p_mumble.active();
      checkFilled();
    }
    function handle() {
      handle();
      checkFilled();
    }
  -->

```

FIG. 10A

TO FIG. 10B

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```
function checkFilled() {
    if (card_type.value == "") {
        p_card_type.activate(); do_field.activate(); return;
    }
    if (card_num.value == "") {
        p_card_num.activate(); do_field.activate(); return;
    }
    if (expiry_date.value == "") {
        p_expiry_date.activate(); do_field.activate(); return;
    }
    p_content.activate();
    p_confirm.activate();
    confirmation.activate();
}
function confirmed(gcb) {
    if (gobj.recogRes.text == "yes")
        get_card_info.submit(gensml());
}
// user codes start here
// function handle() {
if (field == get_card_info.card_num) {
    if (get_card_info.card_num.length != 15) {
        prompt.speak ("amex should have 15 digits");
        get_card_info.card_num = "";
    }
} else {
    if (get_card_info.card_num.length != 16) {
        prompt.speak ("visa should have 15 digits");
        get_card_info.card_num = "";
    }
}
function gensml() {
    str = '<smi><credit_card type="';
    str += card_type.value; str += '><number>';
    str += card_number.value; str += '</number><expire>';
    str += expiry_date.value; str +=
    '</expire></credit_card></smi>';
    return str;
}
}]]>
</script>
</body>
```

FIG. 10B

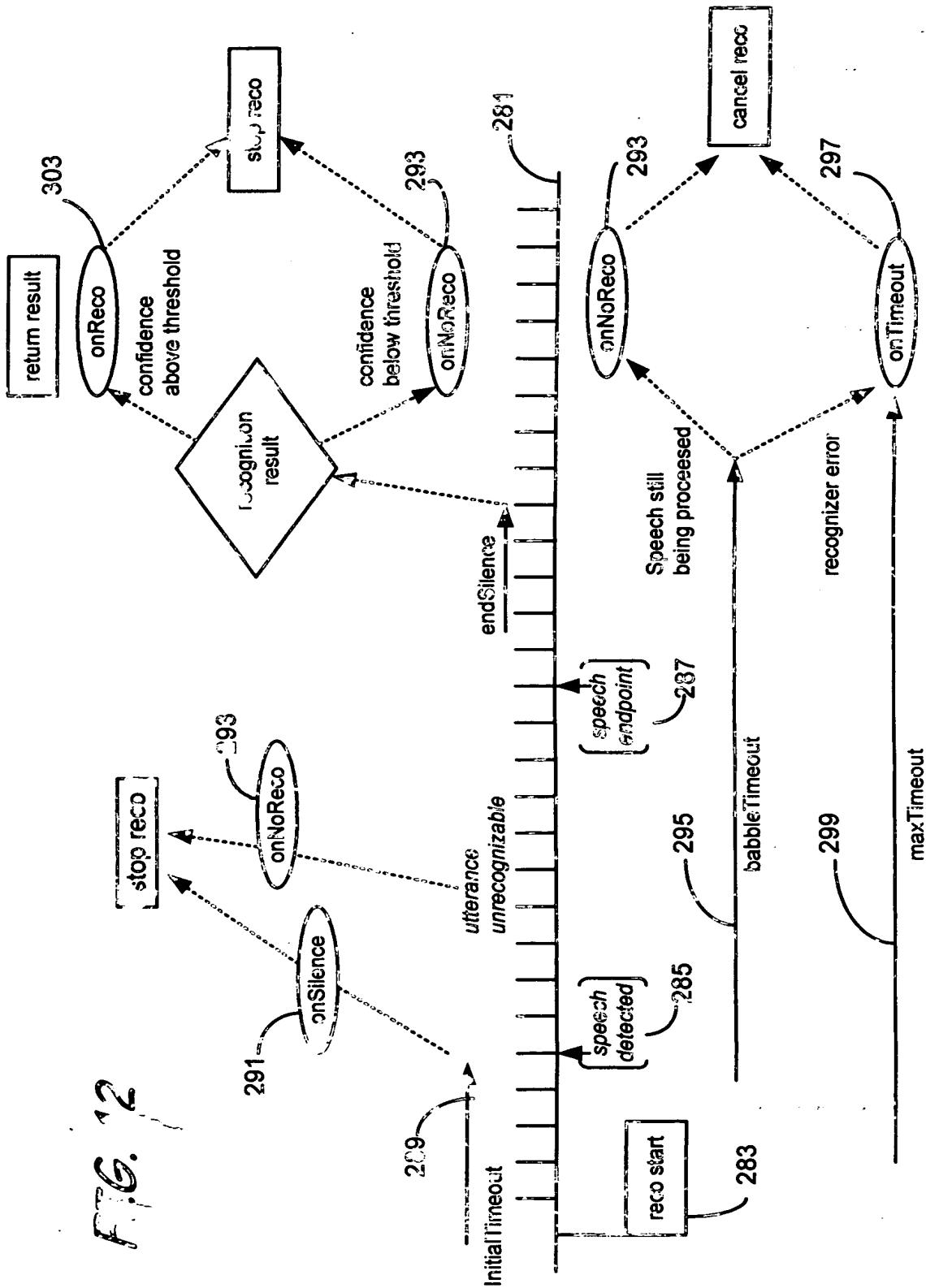
SAMPLE ASP+ PAGE

```

<%@ Page language="Jscript" AutoEventWireup="false" Inherits="Credit.Transaction" %>
<html><head>
<!-- ASPX page for both voice-only &amp; multimodal credit card example --&gt;
&lt;script&gt;
function handle() {
    if (field == get_card_info.card_num) {
        if (get_card_info.card_num.length != 15) {
            prompt.speak ("amex should have 15 digits");
            get_card_info.card_num = "";
        }
    } else
        if (get_card_info.card_num.length != 16) {
            prompt.speak ("visa should have 15 digits");
            get_card_info.card_num = "";
        }
    }
function gensml() {
    str = '&lt;sml&gt;&lt;credit_card&gt;&lt;card_type&gt;';
    str += card_type.value; str += '&lt;/card_type&gt;&lt;number&gt;';
    str += card_number.value; str += '&lt;/number&gt;&lt;expire&gt;';
    str += expiry_date.value; str += '&lt;/expire&gt;&lt;/credit_card&gt;&lt;/sml&gt;';
    return str;
}
&lt;/script&gt;
&lt;script runat="server"&gt;
function Page_Load (obj, args) {
    if (PostBack) {
        validator = new System.Speech.SMLValidator("./CreditSDL.xml");
        dsm = validator.Evaluate(args);
        Navigate(ChoosePage(dsm));
    } else {
        // initialize fields with args
    }
}
&lt;/script&gt;
&lt;/head&gt;
&lt;body&gt;
&lt;speech:form id="get_card_info" style="system_initiative"
    prompt=". /prompt/getPayment" onsubmit="gensml()"&gt;
    &lt;speech:choice name="card_type" prompt="What credit card would you use?"
        grammar=". /gram#card_types" onPhraseFinish="handle()"
        &lt;option&gt;American Express&lt;/option&gt;
        &lt;option&gt;Visa&lt;/option&gt;
        &lt;option&gt;Mastercard &lt;/option&gt;
    &lt;/speech:choice&gt;
    &lt;speech:textbox name="card_number" prompt="Please say the number"
        grammar=". /gram#digits" onPhraseFinish="handle()"&gt;
    &lt;speech:textbox name="expiry_date" prompt="What is the expiration date? "
        grammar=". /gram#dates" onPhraseFinish="handle()"/&gt;
&lt;/speech:form&gt;
&lt;/body&gt;
&lt;/html&gt;
</pre>

```

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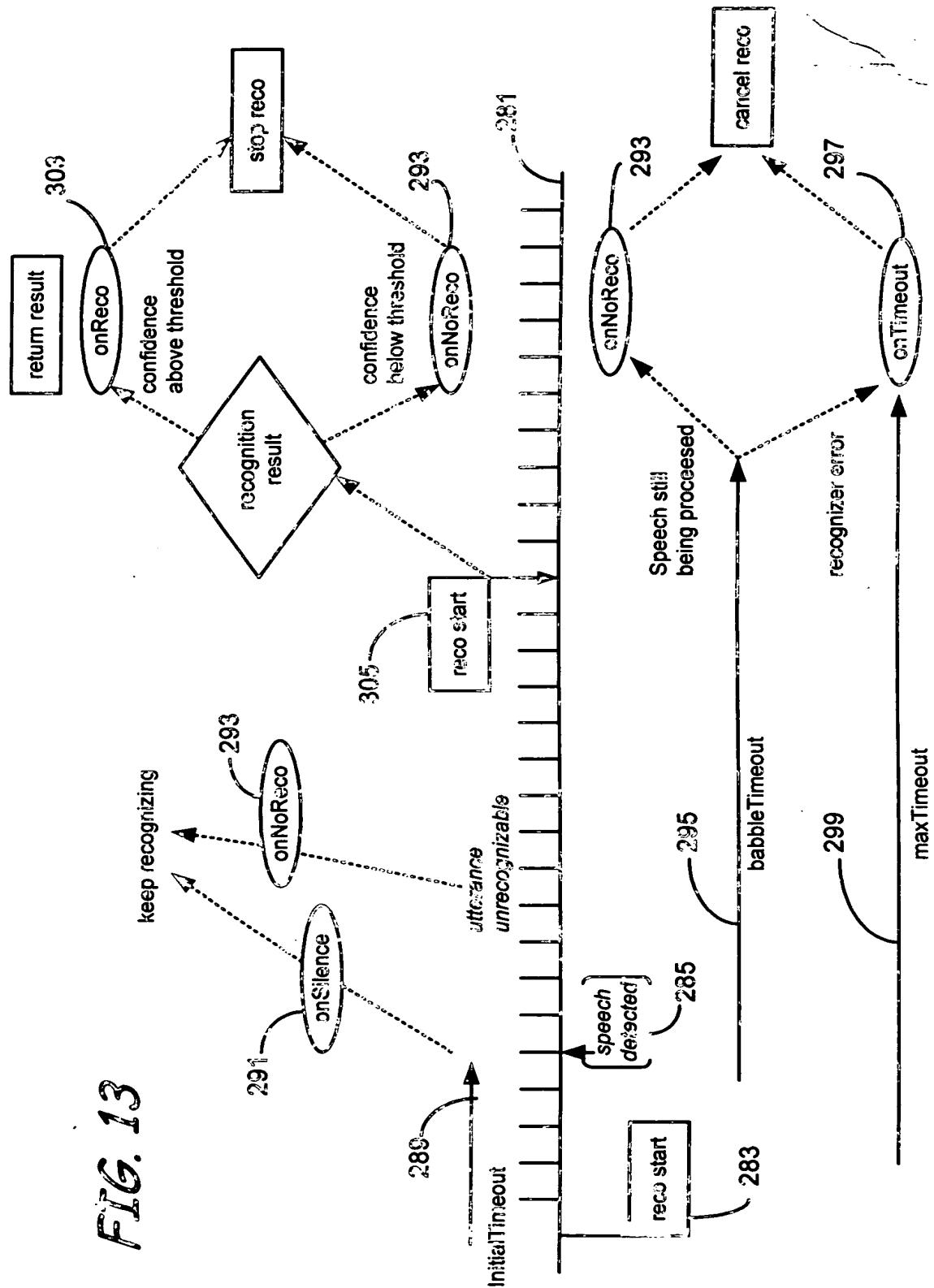


FIG. 14

